



**ARMSTRONG**

**LABORATORY**

**SELF-REPORTED AVIATION CONCERNS OF MALE AND FEMALE  
US AIR FORCE AND ARMY RATED AIRCREW**

**Victoria M. Voge  
Raymond E. King**

**AEROSPACE MEDICINE DIRECTORATE  
CLINICAL SCIENCES DIVISION  
NEUROPSYCHIATRY BRANCH  
2507 Kennedy Circle  
Brooks Air Force Base, TX 78235-5117**

**February 1996**

**Interim Technical Report for Period January 1993 – February 1996**

Approved for public release; distribution is unlimited.

**19960520 077**

**DTIC QUALITY INSPECTED 1**


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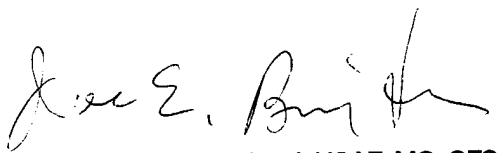
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RAYMOND E. KING, Major, USAF, BSC  
Project Scientist



JOE EDWARD BURTON, Colonel, USAF, MC, CFS  
Chief, Clinical Sciences Division

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE Feb 96	3. REPORT TYPE AND DATES COVERED Technical Report Jan 93 - Feb 96		
4. TITLE AND SUBTITLE  Self-Reported Aviation Concerns of Male and Female U.S. Air Force and Army Rated Aircrew		5. FUNDING NUMBERS  Proj: 7755 Task: S0 WU: 01		
6. AUTHOR(S)  Voge, Victoria M. King, Raymond E.		8. PERFORMING ORGANIZATION  AL/AO-TR-1996-0039		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Armstrong Laboratory (AFMC) Aerospace Medicine Directorate Clinical Sciences Division, Neuropsychiatry Branch 2507 Kennedy Circle Brooks AFB TX 78235-5117		10. SPONSORING/MONITORING		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT  Approved for public release; distribution is unlimited		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words)  An anonymous survey of all US Army and Air Force rated female aircrew and age/duty-matched men covered demographics; aircraft fit and safety; interpersonal relationships, waste disposal, menstruation, personal equipment, prisoner of war (POW), and women-in-combat concerns. Of 1,134 questionnaires mailed, 44-66% were returned (depending on job, service, time in service, and gender). Male and female aircrew were similar in many respects (as delineated in the report), probably indicating self-selection into aviation. Women, however, were medically grounded for prolonged periods twice as often as men, not completely due to pregnancy. Despite safety concerns, women and men were generally happy with their aircraft. Women, and some men, used dehydration/fasting to cope with inadequate aircraft waste collection systems. Small women and large men had problems with personal flight equipment, although equipment fit most aircrew of both genders. Women felt they have to work harder, but admit to having received special help in learning to fly. Many men were upset with "affirmative action" but were reticent to complain. Women had problems with their (male) peers' wives. Many aircrew believed they have inadequate POW training; women fear rape. Men were not convinced women should fly in combat; women overwhelmingly asserted they should. Both genders believed there should be no quotas; combat slots should be allotted on merit. Men thought they might be expected to protect a female POW. Women, although denying menstrual concerns and refusing to take themselves off the flight schedule, admitted to taking over-the-counter and prescription medications to alleviate menstrual symptoms.				
14. SUBJECT TERMS Women Flying Safety Prisoner-of-War (POW)		15. NUMBER OF PAGES 48		
		16. PRICE CODE		
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

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An anonymous survey of all US Army and Air Force rated female aircrew and age/duty-matched men covered demographics; aircraft fit and safety; interpersonal relationships; waste disposal, menstruation, personal equipment, prisoner of war (POW), and women-in-combat concerns. Of 1,134 questionnaires mailed, 44-66% were returned (depending on job, service, time in service, and gender). Male and female aircrew were similar (as discussed in this report), probably indicating self-selection into aviation. Women, however, were medically grounded for prolonged periods twice as often as men, not completely due to pregnancy. Despite safety concerns, women and men were generally happy with their aircraft. Women, and some men, used dehydration/fasting to cope with inadequate aircraft waste collection systems. Small women and large men had problems with personal flight equipment, although equipment fits most aircrew of both genders. Women felt they have to work harder, but admit to having received special help/favors in learning to fly. Many men were upset with "affirmative action" but were reticent to complain. Women had problems with their (male) peers' wives. Many aircrew believed they have inadequate POW training; women fear rape. Men were not convinced women should fly in combat; women overwhelmingly asserted they should. Both genders believed there should be no quotas; combat slots should be allotted on merit. Men thought they might be expected to protect a female POW. Women, although denying menstrual concerns and refusing to take themselves off the flight schedule, admitted to taking over-the-counter and prescription medications to alleviate menstrual symptoms.

Women have been flying various types of aircraft almost since flight began, without major problems specifically related to their gender (9). Female pilots in the Women's Air Force Service Pilots (WASPs) were not considered active duty at the time of their flying service. These women were trained primarily to release male pilots for combat duty in World War II. Women were not *officially* allowed to fly military aircraft until April 1973, when the Army Aviation Flight Program was opened to women. In September 1976, the first cadre of female USAF pilot candidates entered Undergraduate Pilot Training (UPT). Women were generally required to meet the same physical standards men had to meet, especially as related to height and weight (9, 3). Claims of discrimination in favor of or against female military aircrew have surfaced during the controversy of whether women should be allowed to fly aircraft in combat (6). On 28 April 1993, the Secretary of Defense ordered combat flight positions be opened to women. Only 40% of American women meet the height and weight requirements to fly combat aircraft. The Secretary of Defense has also ordered aircraft changes to accommodate 80% of US women (11). The purpose of the present study was to examine self-reported characteristics of military rated female aircrew members and compare this data to male controls.

## Methods

We conducted a comprehensive survey, by anonymous questionnaire in 1993, of all rated female aircrew in the US Air Force and the US Army. The US Navy (and, consequently, Marine Corps) declined to participate in the survey. Each female aircrew member was paired with an age-matched male aircrew member with the same flight duty (pilot, navigator, flight surgeon); no enlisted aircrew or flight nurses were surveyed. The questionnaires were mailed to each selected aircrew member (women and matched men). The aircrew names, duty stations, birth dates and flight duties were obtained from Army and Air Force personnel rosters. Male aircrew were matched to female aircrew as closely as possible by actual birth dates. The actual birth date was selected to minimize any bias that might be present from enhanced or diminished promotion or career opportunities due to gender. Also, birth date matching helps ensure the men and women surveyed grew up and were exposed to as similar as possible environmental/social forces.

The questionnaire was extensive, based primarily on "yes/no" questions. The entire questionnaire is provided in Appendix A. As reflected in that questionnaire, participants were encouraged to amplify on their responses, as desired. The areas covered included:

### **A. General Information:**

time in military/on flight status  
flight time  
marital status  
aircraft mishap information  
grounding information, etc.

### **B. Aircraft Information:**

desire to be in current aircraft  
preferred aircraft  
"fit" of current aircraft  
safety concerns with current aircraft  
adequacy of waste collection  
preflight fasting/dehydration, etc.

**C. Flight Gear Information:**

fit and/or other problems with  
flight suit,  
anti-G suit,  
flight boots,  
helmet,  
flight gloves,  
torso harness,  
oxygen mask,  
or eyeglasses

questions related to weight and adequacy of issued flight gear, etc.

**D. Interpersonal Relationships:**

problems related to respondent's gender as to peer treatment  
"breaks" (leniency)  
subordinate, peer, and superior relationships  
assignments  
performance requirements and actual performance  
need to prove self  
squadron cohesion (bonding)  
work requirements  
perceptions of ways to be successful in squadron; etc.

**E. Other:**

prisoner of war (POW) concerns and adequacy of training  
desirability of women to fly combat  
menstrual information (women only).

The yes/no responses were evaluated in five major areas: (a) total yes/no for each question; (b) total yes/no for men vs. women; (c) total yes/no for Air Force women and men vs. Army women and men; (d) total yes/no for pilots vs. navigators vs. flight surgeons; and (f) total yes/no for those with more than five years military experience (Air Force men and women, Army men and women) vs. those with five years or less military experience in the same categories. The individual subjective comments of all participants were recorded and evaluated separately. Two dimensional frequency tables were analyzed using Pearson chi-square (10). Three dimensional frequency tables were analyzed by fitting log-linear models and reporting the partial associations as computed by the BMDP 4F procedure (1). The level of significance was set at  $p < 0.05$ .

In developing the questionnaire, we investigated as many potential differences between male and female aircrew as possible. These potential differences were gleaned from Congressional hearings on the subject, as well as from over twenty years of personal experience (first author was one of the first military female flight surgeons) dealing with the introduction of female aircrew into the military. The questionnaire was tested and retested on local officer aircrew, both male and female, to determine any biases, as well as to search out new, previously unrecognized, areas of concern. All *perceived* biases were eliminated before the questionnaire was mailed to the target population.

## Results

Of the 1,134 questionnaires that were mailed to potential participants, between 44% and 62% were returned, for an overall return rate of 53% as outlined below:

flight surgeons	44%	(53/120)
pilots	52%	(441/850)
navigators	62%	(102/164)
all	53%	(596/1,134)

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Air Force men	55%	(183/335)
Air Force women	56%	(187/335)
Army men	49%	(114/232)
Army women	48%	(112/232)
all	53%	(596/1,134)

A total of 370 Air Force (55%) and 226 Army (49%) personnel returned their questionnaires, with similar percentages of men (53%--297/567) and women (53%--299/567) responding. A similar percentage of participants in both services had been in the military for five or less years (Air Force men 35%, Air Force women 32%, Army men 35%, Army women 38%), and more than five years (Air Force men 65%, Air Force women 68%, Army men 65%, Army women 62%). Most of the participants were pilots (74%--441/596), with the least number of participants being flight surgeons (9%--53/596). The respondents were similar in flight time and age. Significant differences in accrued flight time were found between the services ( $p < 0.0001$ ). There were no significant differences in flight time or age between genders in either of the services. Flight surgeons tended to be significantly older ( $p < 0.0001$ ), with significantly less flight time than their non-medical aircrew counterparts ( $p < 0.0001$ ). Not all respondents chose to answer all yes/no questions.

### Career Aspirations:

Of those responding, significantly more men (76%--199/262) desired to make the military a career than women (57%--151/266) ( $p < 0.0001$ ). Fewer Air Force women (54%--86/160) desired to make a career of the military than did Army female aircrew (61%--65/106) (not significant). Navigators were the most highly motivated (80%--74/92), with pilots (64%--250/393) and flight surgeons (60%--26/43) the least motivated, for a military career ( $p < 0.006$ ). Those with less than five years active military service (52%--93/178) were significantly less motivated for a career in the military than those with five years or more service (74%--257/349) ( $p < 0.0001$ ).

### Marriage and Children:

Sixty-five percent (387/596) of all aircrew were married, with the next largest group being single (29%--174/596). Significantly more women (43%--128/299) than men (27%--80/297) were single, separated, or divorced ( $p < 0.0002$ ). The numbers varied little between the services and flight role. Eighty-six percent (333/386) of respondents with spouses felt their spouses encouraged them in their career. Respondents reported Army spouses (93%--144/155) to be significantly more supportive than Air Force spouses (82%--189/231) ( $p < 0.01$ ). Flight surgeons reported significantly less spousal encouragement than the other groupings (69%--22/32) ( $p < 0.006$ ). Seventy-eight percent (232/299) of women had no children, while 48% (143/297) of men reported having no children ( $p < 0.0001$ ). This differentiation was similar



between the services. Flight surgeons had significantly more children than the other groupings (greater than one per person) ( $p < 0.02$ ).

#### **Aircraft Assignment, Mishap and Injury History:**

Men were significantly more likely to be assigned to combat-type aircraft (33%--96/295) and women to transport aircraft, helicopters, or other non-combat aircraft (97%--288/297) ( $p < 0.0001$ ). Women (7%--21/299) had slightly, although to a nonsignificant extent, fewer aircraft mishaps than men (10%--30/297). When mishap history is broken out by service, Army men (16%--18/114) experienced, again to a nonsignificant extent, more mishaps than did the other groupings. Flight surgeons reported rarely being involved in aircraft mishaps (2%--1/53). Men and women, regardless of service, generally had not been injured in their aircraft (1%--8/596). Assessment of service members who lost their lives in aircraft mishaps may be possible by using the databases available at the Air Force and Army safety centers.

#### **Medical Grounding History:**

For all the above survey questions, the respondents had little in the way of additional subjective comments to add to the questionnaire. The yes/no format seemed to satisfy their response requirements. This pattern changed when they were asked if they had been grounded (found medically unfit for flight duty) for periods greater than 30 days. When asked if they had been grounded for periods greater than thirty days (yes/no), women (33%--100/299) were grounded significantly more often than men (15%--45/297) ( $p < 0.0001$ ); the service to which they belonged did not seem to matter. The men usually admitted to no more than one period of grounding lasting more than thirty days, and explained their groundings by having had fractures, infections, chronic illnesses (e.g.: gout, Grave's disease), surgeries (e.g.: hernia) or physiological problems (e.g.: heart dysrhythmias). Some misunderstood the question and reported administrative groundings (other non-flying duty, disciplinary, aircraft grounded). Since the objective and subjective components of the questionnaire were evaluated separately, the administrative groundings were not excluded from the "yes/no" results of the questionnaire. Women occasionally admitted to multiple groundings of more than thirty days, and generally reported being grounded for the same reasons as did men (administrative groundings: other non-flying duty, disciplinary). If we ignore all administrative groundings and count each subjectively reported medical grounding, a full 63% (80/128) of the women's groundings were due to pregnancies or complications of same. Some reported as many as four pregnancies during their military career. Excluding all reported administrative groundings and pregnancy-related groundings, the women's grounding rate was 16% (48/299), as compared with men's rate of 11% (33/297) ( $p < 0.01$ ).

#### **Other Information:**

Finally, respondents were asked if they would like to add any subjective comments to this section. Many respondents (35% Air Force, 47% Army) did so, with a great variety of comments, indicating their special areas of concern. Most comments related to what the respondents' exact job roles were, or the breadth of their experience, or what they hoped to do in the future, either in or out of the military. Some chose to comment on the military draw-down, and their unhappiness with it; their health status; their spouse's status or desires. Some women in both services explained they were leaving the military to either be close to their spouse and/or to raise their children.

### **Aircraft Desirability:**

Overall, women (60%--180/299) and men (59%--176/297) were about equally satisfied with the aircraft they were assigned upon graduation from flight school [Army men 69% (79/114), Army women 67% (75/112), Air Force men 53% (97/183), Air Force women 56% (105/187)]. More Army aircrew were happy with their aircraft assignment than were Air Force aircrew ( $p<0.001$ ). Flight surgeons least desired their current aircraft as compared to other aircrew [pilots 62% (271/441), navigators 61% (62/102), flight surgeons 43% (23/53)] ( $p<0.04$ ). Air Force men and women frequently commented they initially wanted fighters after undergraduate flight training, which weren't available to them either because of lack of availability or because of their gender. Many commented, even though they were given an aircraft they did not choose, they greatly enjoyed flying it. Some chose a particular aircraft simply because of home base location, or because they did not want to fly a certain type of aircraft, e.g.: "heavies" or bombers, or did not want a certain job["banked" (non-flying) or instructor pilot]. Air Force women wanted instructor jobs more than men wanted instructor jobs. Army men and women preferred attack aircraft, or an "advanced" helicopter, or a fixed-wing aircraft. Of those who would prefer to fly a different aircraft from what they currently fly, Air Force women preferred to be assigned to transports (39%), or fighters (24%), or trainers (20%). Air Force men preferred fighters (39%) or transports (20%); Army men and women preferred attack (men 30%, women 31%) or utility (men 56%, women 53%) helicopters. Once assigned to their aircraft, more women (62%--184/299) than men (56%--166/297) wanted to remain in that aircraft. Here there was less difference between the Army [men 54% (62/114), women 63% (71/112)] and the Air Force [men 57% (104/183), women 60% (113/187)]. Flight surgeons were more content with their assigned aircraft [flight surgeons 64% (34/53), pilots 57% (250/441), navigators 65% (66/102)], and desired to remain in that aircraft. Reasons for wanting to change to a different aircraft were different between services and genders. Air Force men primarily wanted to fly fighters or another type of tactical/combat aircraft, or an aircraft that was more career enhancing, while a few others complained their present airframe required too much TDY ("temporary duty" or travel time). Others complained their present aircraft was simply too old. Air Force women's primary complaint was there was too much TDY time in their present aircraft and they could not attend to family/personal matters. A few wanted to fly fighter or another type of combat aircraft, while others wished to change aircraft simply to live in a better location. A few women cited a change in aircraft would enhance their career, while others maintained they were "bored" with their present aircraft's mission. Army men wanted to change because their present aircraft was either too old and/or being phased out, or they needed an advanced aircraft for promotion. Some wanted to fly a fixed-wing aircraft instead of helicopters. Army women simply desired a more advanced aircraft, or felt their present aircraft was outmoded. A few Army women wanted to transition to fixed-wing aircraft.

### **Aircraft Fit:**

Respondents generally felt their assigned aircraft "fit" them. Women, although generally happy with the aircraft fit (85%--254/299), were less pleased than men (89%--264/297). Air Force men were the most pleased (91%--167/183) and Air Force women were the least pleased (83%--155/187) ( $p<0.02$ ). When fit problems were manifested, men usually complained their legs were too long (50%--14/28) [Air Force men 50% (8/16), Army men 50% (6/12)] or that the seat was not adjustable enough (25%--7/28) [Air Force men 25% (4/16), Army men 25% (3/12)], and the women complained their legs were too short (44%--16/36) [Air Force women 48% (13/27), Army women 33% (3/9)], their arms were too short (42%--15/36) [Air Force women 41% (11/27), Army women 44% (4/9)], or that the seat was not adjustable enough (36%--13/36) [Air Force women 33% (9/27), Army women 44% (4/9)]. One woman complained she could not reach the emergency circuit breakers, while another stated she could not reach the overhead panel. Some women admitted to using cushions to make the aircraft fit better. Surprisingly, some Army

women complained either their legs were too long (22%--2/9) and/or that their arms were too long (22%--2/9). There were a few complaints from Army men and women that some aircraft's dash/instrument panels were simply too high to see over. Sufficient strength to manage the controls was essentially not a factor with men or women (3%--1/36). A few Air Force women did complain they have trouble with the heavy controls, one admitting to working out to maintain the needed upper body strength. When asked about general problems with aircraft fit, many Air Force men complained the ejection seats were uncomfortable, too small, or were not adjustable enough, and/or caused back pain. Some Air Force women complained of simply being too short--not being able to see over the glare shield, or having difficulty reaching the throttles or setting the brakes, even with the seat full forward with the yoke abutting their chest and knees. A few Army men complained the instrument panel obstructed the view, or that the seats were not adjustable or were uncomfortable. Army women did not manifest any specific general complaints.

### **Safety Concerns:**

Slightly more men (24%--72/297) than women (21%--63/299) had safety concerns with their aircraft. These concerns were considerably more frequent in the Air Force [men 26% (48/183) and women 26% (49/186)], than in the Army [men 21% (24/114), women 13% (14/112)] ( $p<0.01$ ). Most Air Force men's and women's complaints concerned the age of the aircraft they flew: greater than 30 years old with many flight hours. Specific complaints centered around inadequate weather radar and fuel gauges. Many were concerned with structural failures in these aircraft because of already documented problems such as wing cracks, windshield post cracks, windshield cracks, fuselage cracks, fuel leaks, and other fatigue-related structural problems and worn-out parts. These older aircraft apparently require an inordinate amount of maintenance: some of the problems cannot be fixed either because of inadequate funding or inadequate number of maintenance personnel, presumably due to downsizing. Even so, the aircraft were still deemed safe to fly. Some of the newer aircraft were also felt to be unreliable because of electrical problems. There were a few concerns that emergency egress procedures were not adequate. Some participants raised aircrew inexperience and/or fatigue as issues, as they were required to push their flight hours to fly up to the monthly maximum permitted. They then either stood down the rest of the month or were waived for additional hours. Army men and women expressed considerably fewer concerns, although they echoed the Air Force's complaints to an extent. The primary concerns seemed to be an inadequate number of maintenance personnel, working long hours, and the crashworthiness of the aircraft. There was some concern for the age of the aircraft flown, or lack of sufficient power for the mission.

### **Waste Collection Adequacy:**

**Urination:** Fifty-three percent (158/297) of men and 51% (151/299) of women surveyed felt their primary aircraft had adequate facilities for them to urinate (no significant difference). This finding was service specific, in that only 14% (16/114) of Army men and 12% (13/112) of Army women felt the facilities were adequate, as compared with 78% (142/183) Air Force men and 74% (138/187) Air Force women ( $p<0.001$ ). It was also duty specific, in that 94% (96/102) of navigators felt facilities were adequate, while 55% (29/53) of flight surgeons and only 42% (184/441) of pilots felt the facilities were adequate ( $p<0.001$ ).

**Defecation:** More women (47%--141/299) than men 37%--111/297) felt their primary aircraft had adequate facilities to defecate ( $p<0.005$ ). Again, this finding was service specific, in that more Air Force men (55%--100/183) and women (69%--129/187) felt facilities were adequate than Army men (10%--11/114) and women (11%--12/112) ( $p<0.001$ ). Army personnel generally felt their aircraft did not have

adequate facilities. Navigators (16%--16/102) admitted to fewer problems than did pilots (64%--284/441) and flight surgeons (51%--27/53) ( $p<0.001$ ).

**General waste collection comments:** Length of service did not differentiate between urination and defecation difficulties. The majority of women (55%--165/299) felt changing sanitary napkins in-flight was a problem, more so in the Army (89%--100/112) than the Air Force (35%--108/187) ( $p<0.001$ ). The problems of in-flight waste collection elicited seemed to depend on type of aircraft flown. The older Air Force aircraft, in particular, seemed plagued by non-functional or inadequate facilities. Privacy also seemed to be a problem. The new logistic aircraft had problems related to difficulty in use of waste collection facilities and privacy. Some women solved the problem by urinating in a cup and pouring it into a urinal, or accommodating a cup to the urinal. Some women complained they didn't use a facility (e.g.: KC-135) because the enlisted personnel had to "flush" it and they "...get real upset...." Very few women admitted to wearing a "diaper;" others stated they refuse to wear such a garment. A few men felt the "piddle pak" solved their problems, although there were complaints of leakage. One woman said she would never use the facilities on her aircraft, although available, because of its inadequateness and lack of privacy, even though her flights last up to 8.5 hours. Army participants had somewhat different responses to these questions. The men generally felt there was no problem, as they simply land their helicopters in a field to relieve themselves. Some Army women echoed this solution. Most seemed to feel flights in Army helicopters or logistics aircraft do not last long enough to present any problem (2-2.5 hours).

**Fasting and dehydration:** Respondents were questioned regarding what they did to avoid having to relieve themselves in flight. Both men and women admitted to dehydrating themselves before a flight, women (25%--75/299) more than men (8%--23/297) ( $p<0.001$ ), and Army women (38%--43/112) more than Air Force women (17%--32/187) ( $p<0.001$ ). More flight surgeons (21%--11/53) dehydrated themselves than pilots (18%--80/441), and more pilots than navigators (7%--7/102) ( $p<0.02$ ). Time in service did not affect one's coping with lack of facilities by dehydration. A much smaller number admitted to fasting before a flight, most of these being flight surgeons (13%--7/53), as compared with navigators (5%--5/102) and pilots (2%--10/441) ( $p<0.001$ ); or women (5%--16/299) (men 2%--6/297) ( $p<0.05$ ). Army women dehydrated themselves the longest, with a reported maximum time of 18 hours, followed by Air Force men, with a reported maximum time of 12 hours, and Air Force women, with a reported maximum time of 10 hours. Fasting among aircrew lasted up to 15 hours for Air Force women. Longer flights were not the only issue, as some aircrew admitted to dehydrating themselves for flights as short as 1.3 hours. Aircrew had their unique methods for avoiding having to defecate or urinate in flight, such as avoiding caffeine, use of piddle paks/urinary catheters, voiding or defecating immediately prior to flight, special low-residue diets, rigging up some sort of portable device in aircraft, arranging to have no long flights, or exercising "self-control." One participant, an Air Force woman, admitted to "training" herself not to have to eliminate for 16-20 hours. The reason aircrew gave for fasting and dehydrating themselves before and during flights was the inadequacy or complete lack of in-flight waste elimination facilities. Men and women of both services had ideas for solutions to these problems. Redesign of the female flight suit was mentioned, since women must nearly disrobe, just to urinate, causing problems with the amount of time required, space, and privacy. A few mentioned an extended zipper under the crotch of the flight suit would greatly facilitate waste elimination. Some sort of piddle pak for women, that is flexible and comfortable even under pressure, was requested. Both men and women felt functional latrines, with privacy adaptations, would be welcome in appropriate aircraft. One man stated penile condoms for urinary collection are standard issue in his squadron. He felt this is a good solution to most of the men's urination problems. Both genders felt waste elimination while wearing chemical defense gear was nearly impossible.

### **Flight Suit Fit:**

Significantly more women (36%--108/299) than men (9%--26/297) felt their flight suit did not fit properly ( $p<0.001$ ). In both services, women found the suit to be less adequate than for men ( $p<0.001$ ). Of those who had fit problems, many Air Force men (56%--9/16) felt the suit was too tight (the Air Force's new, and now discontinued, "tailored" flight suit was worn by a good number of respondents). Complaints of bagginess (19%--3/16) and being too short (13%--2/16) were also noted. Air Force women's major complaint was the flight suit was too baggy (47%--36/77) [standard (old-style) flight suits], but there also were frequent complaints of the suit being too tight (35%--27/77) (Air Force's tailored suit), and too long (31%--24/77). Army men had the fewest complaints ( $n=10$ ); the major complaint was that the suit was too short (30%--3/10). Army female complaints were similar to those of Air Force women in that the suit was too baggy (39%--12/31) and the crotch was too long. For the hips to fit, the chest area frequently was too big; if the chest fit, the hips were too tight. Women repeatedly complained the flight suits were fitted for men (triangle), and not women (inverted triangle). Even though the women may fly up to the last trimester of pregnancy, there is no expansion capability in the flight suits. Both Air Force men and women alike felt the new, now discontinued, tailored flight suit fit was poorly designed.

### **Anti-G Suits:**

Significantly more Air Force men ( $n=46$ ) than Air Force women ( $n=20$ ) or Army ( $n=2$ ) aircrew admitted to wearing anti-G suits ( $p<0.001$ ). There were only four complaints about the anti-G suit function/fit, but women had significantly more complaints ( $p<0.05$ ). Of those who wore anti-G suits and had complaints, the men tended to feel the suit was too short and the women felt it was too loose. Some of the Air Force women who had experience wearing them noted that the suits had to be specially modified to fit ( $n=2$ ), the waist was too large ( $n=3$ ), or the suit rode up on the rib cage ( $n=1$ ).

### **Flight Boots:**

There were 49 complaints about flight boots, although Air Force women had significantly more complaints ( $n=29$ ) than did the others ( $p<0.001$ ). Apparently, the Army uses standard black leather combat boots for flight duty. Some complained that these tend to "hang up" on rudder pedals, due to depth of tread. Some Air Force aircrew, primarily women, did complain about the difficulty of getting boots to fit. Women generally needed narrower and/or smaller boots. Men had a variety of problems with fit, with no specific area of complaint. Most of these problems were resolved with special-order boots.

### **Flight Helmets:**

Ninety-one percent (205/226) of Army and 45% (164/370) of Air Force aircrew generally wore flight helmets. Army men (95%--108/114) ( $p<0.02$ ) and Air Force men (56%--102/183) ( $p<0.001$ ) wore helmets significantly more than their female counterparts [Air Force (33%--62/187), Army (87%--97/112)]. Men predominately wore a medium (44%--93/210) or large (48%--101/210) size, while women most frequently wore a medium (47%--75/159) or small (27%--43/159) size. The helmets generally fit well for 77% (162/210) of men and 70% (112/159) of women (no significant difference in fit). When complaints were elicited, both men ( $n=35$ ) and women ( $n=36$ ) complained their helmets caused hot spots. This was more of a complaint in the Army ( $n=54$ ). A smaller number ( $n=13$ ) felt the helmets were too tight. Apparently, the Air Force is using a bubble liner and the Army is using a thermoplastic liner. A common complaint was the night vision goggles made the helmets very top heavy.

Earcups frequently were cited as being too loose or too tight. Some aircrew had custom earcups, which apparently were very comfortable. Noise attenuation seemed to be a problem.

### **Flight Gloves:**

Flight gloves fit well for significantly more men (96%--286/297) than women (88%--264/299) ( $p<0.001$ ). When problems were recognized, women generally complained the flight gloves were too large as the fingers of the gloves are too long ( $n=27$ ); men complained they were too small ( $n=6$ ). Apparently, very large and very small glove sizes are not available, or are difficult to obtain. One participant admitted to wearing Royal Air Force goatskin gloves for comfort.

### **Torso Harnesses:**

Questionnaire respondents did not very frequently wear torso harnesses (Air Force men 28%--52/183, Air Force women 12%--22/187, Army men 11 %--13/114, Army women 15%--17/112), although significantly more Air Force men wore them ( $p<0.001$ ). When worn, they were usually fitted properly (men 98%, women 86%), although women had a significantly poorer fit ( $p<0.02$ ). If the torso harness did not fit well, it was too small for men and too large for women. Inappropriate placement of hardware on the harness was noted. Some respondents did not recognize the term "torso harness," inquiring if it was the same as the survival vest or the seat belt.

### **Oxygen Masks:**

Significantly more Air Force men (53%--96/183) than women (39%--72/187) wore oxygen masks ( $p<0.01$ ). Army aircrew did not normally wear an oxygen mask (Army men 8%--6/114, Army women 7%--9/112). Significantly more women ( $n=29$ ) than men ( $n=19$ ) complained the oxygen mask did not have a good fit and it was difficult to get a good seal ( $p<0.01$ ). When a standard oxygen mask was worn, men generally complained the mask was either too tight (11/19) or too loose (6/19), while women complained the mask was too large (15/27). Another problem, for both men and women, was hot spots (5%--9/183) and that the mask was not narrow enough (8%--15/183). More women (25%--20/81) than men (19%--19/102) complained of difficulty seeing over the mask, although the gender difference was not significant.

Custom-fitted masks were not common. Only 6% (or 18/297) of men and 10% (29/299) of women had custom-fitted masks. When custom-fitted oxygen masks were used, most men felt they fit well (94%--17/18). Thirty-one percent (9/29) of women felt the custom-fit masks fit poorly, and 38% (11/29) had some other type of problem with the masks. Women seemed to have problems because of the narrowness of their faces, and complained of leakage around the bridge of their nose. A suggestion was made for the oxygen hose to come from the bottom of the mask, since increased G forces cause the present mask/hose configuration to torque the head.

### **Eyeglasses:**

Significantly more navigators (42%--43/102) and flight surgeons (57%--30/53) than pilots (21%--94/441) wore eyeglasses ( $p<0.001$ ). Overall, eyeglass use by men (Air Force 31%--56/183) and women (Air Force 31%--58/187, Army 29%--32/112) were similar, except the percentage usage for Army men was lower (18%--21/114), but not significantly so. Many Air Force aircrew admitted to wearing contact lenses, while Army aircrew would like to have the opportunity to wear contact lenses. The numerous various problems with eyeglasses and oxygen masks includes fogging, perspiration on glasses, blind

spots, G forces pull eyeglasses down on nose, etc. Many complained of discomfort due to helmet use with eyeglasses. Most of these problems were due to pressure points caused by the eyeglass bows and the earcups. The aircrew felt they were forced to make adaptations to their helmets or eyeglasses to ameliorate this problem, since the pain/pressure proved to be a serious distraction. Some merely did not wear their corrective lenses while flying. The use of noise attenuation equipment with eyeglass use was also a problem.

#### **General Flight Gear Information:**

Most respondents (91%--543/596) did not believe their issued flight gear was too heavy, although 11% (13/114) of Army men and 10% (11/112) of Army women believed the weight to be excessive as compared to 7% (12/183) of Air Force men and 2% (4/187) of Air Force women. This difference seemed to primarily be related to the Army's in-flight use of survival and, occasionally, flak vests. G forces did not seem to make the gear too heavy (only 2%--13/596 answered in the affirmative). More men (23%--69/297) than women (15%--45/299), and more Army (24%--55/226) than Air Force (16%--59/370) aircrew, they should have gear not normally issued (Army men vs. Army women,  $p<0.01$ ; Army men vs. Air Force men,  $p<0.01$ ). Air Force personnel wanted "David Clark" type (or better) headsets, cold weather gear, and various survival items. Proper fit and integration of chemical protection gear appeared to be a problem. Army personnel wanted items such as HEEDS bottles (for underwater survival breathing), contact lenses, flight boots, and thermal underwear. Of the very few personnel who felt they were issued too much gear, women comprised the larger group (5%--15/299).

#### **Perceived Other Gender Equality:**

Five percent (15/297) of men and 19% (58/299) of women felt they were not treated on an equal basis with their opposite-gender peers ( $p<0.001$ ). Nine percent (10/114) of Army men felt this way, while only 3% (5/183) of Air Force men were of this opinion ( $p<0.02$ ). Many women who did not answer this question commented there were either no women in their squadron or, as the only woman, or one of two, they consequently could not answer this question. Twenty-four percent (27/112) of Army women felt this way, while only 17% (31/187) of Air Force women felt this way ( $p<0.05$ ). Flight role (pilot vs. navigator vs. flight surgeon) did not make any significant difference in this area.

#### **Perceived Other Gender Favoritism:**

Five percent (16/299) of all women felt they received special "breaks" because of their gender, while only 1% (2/297) of men felt this way; most of these were in the Air Force (no significant difference). Also, 7% of navigators and 6% of flight surgeons offered they received "special breaks" because of their gender, while only 1% of the pilots felt this way (no significant difference). Some of the male aircrew (33%--99/297) felt female aircrew members received special breaks denied them because of gender, while fewer women (23%--69/299) believed men received special treatment ( $p<0.001$ ). Army men and women were most adamant in this assertion ( $p<0.001$ ). This feeling was most manifest among pilots and least among flight surgeons ( $p<0.003$ ). Women felt they had not received the "breaks" their male counterparts had received because of the combat exclusion clause, which had just been rescinded at the time of this survey. Many thought the playing field would now be more level. Men felt women got special breaks, such as being given more chances to do a job and not being held to the same high standards as men.

### **Perceived Gender Relationship Concerns:**

When considering relationship problems that might be caused by their gender, 25% (28/112) of Army women and 18% (33/187) of Air Force women felt they had problems with their peers, compared with Army men (1%--1/14) and Air Force men (1%--1/183) ( $p<0.001$ ). There was no significant difference between services. Men reported having no relationship problems due to their gender. Men perceived some "reverse discrimination." Women complained that men attempted to make sexual advances and perceived that men felt them (women) to be inferior to men in flying ability, and not belonging due to their (female) gender. Women also reported being subjected to crude and rude remarks and being openly denied jobs/advances/benefits due to their gender. Most women who commented felt these instances were isolated to a few individuals and occasions, and things were getting better with time.

### **Perceived Job Discrimination Because of Gender:**

Thirty-four percent (102/299) of women (33%--62/187 Air Force, 36%--40/112 Army) felt they were denied a desirable assignment due to their gender, while only 6% (18/297) of men (4%--7/183 Air Force, 10%--11/114) Army felt this way ( $p<0.001$ ). Men related they were put in undesirable jobs because other jobs were reserved for women, while some women complained they formerly could not be assigned to fighter aircraft because of the combat exclusion clause. Other women complained they were denied certain career-enhancing jobs, despite being qualified, due to their gender. Seven percent (22/299) of women (9%--16/187 Air Force, 5%--6/112 Army) felt they were offered a desirable assignment because of their gender, while only 1% (4/297) of men indicated they were offered a desirable job due to their male gender (1%--1/183 Air Force, 3%--3/114 Army) ( $p<0.001$ ).

### **Perceived Gender-Driven Performance Requirements:**

Women (73%--218/299; 66%--124/187 Air Force, 84%--94/112 Army) overwhelmingly felt they needed to perform to higher standards than their male counterparts, and needed to "prove selves" (69%--206/299; 61%--114/187 Air Force, 82%--92/112 Army) to peers and superiors more than their male counterparts. More Army men (25%--28/114) than Air Force men (11%--20/183) believed they needed to perform to higher standards than their opposite-gender peer, while 6% (11/183) of Air Force men and 8% (9/114) of Army men felt they needed to prove themselves more than their female counterparts ( $p<0.001$  between sexes and services). These feelings were most prevalent amongst pilots (higher standards 49%--215/441; prove selves 41%--182/441) and navigators (higher standards 41%--42/102; prove selves 31%--32/102), and least so among flight surgeons (higher standards 17%--9/53; prove selves 23%--12/53).

### **Perceived Gender-Based Aircraft Assignment:**

Fifty percent (149/299) of women indicated their gender was a factor in aircraft assignment, primarily due to the combat exclusion clause. Thirteen percent (40/297) of men also considered their gender to be a factor in their assignments ( $p<0.001$ ). More Army men (20%--23/114) and women (56%--63/112) believed gender was a factor in aircraft assignment than Air Force men (9%--17/183) and women (46%--86/187) ( $p<0.01$ ). Overall, navigators (43%--44/102) most frequently cited gender-based assignments, pilots somewhat less so (32%--143/441), and flight surgeons dramatically less (4%--2/53) ( $p<0.001$ ). Both men and women felt they received their fair share of the "best flights," 83% (247/297) and 76% (228/299) respectively; Army personnel (men 78%--89/114, women 67%--75/112) were less likely than Air Force personnel (men 86%--158/183, women 82%--153/187) to believe they get their fair share of the best flights ( $p<0.002$ ). Both men and women believed they did not get their fair share of good flights due



to scheduling inadequacies, the "good old boy" network, overabundance of pilots/co-pilots, and too much work to do on ground (primarily Army officers as Army warrant officers do most of the flying).

### **Perceived Gender Inequality In Flight Training:**

About the same number of men (31%--93/297) as women (34%--103/299) felt instructor pilots treated male students differently from female students. This belief, however, was less prevalent amongst Air Force men (26%--47/183) and women (33%--61/187), and more prevalent among Army men (40%--46/114) and women (38%--42/112) ( $p<0.003$ ). Thirty-nine percent (170/441) of pilots, 23% (23/102) of navigators, and only 6% (3/53) of flight surgeons felt instructor pilots treated men and women differently ( $p<0.001$ ). Men overwhelmingly felt women were treated differently than men: being given more time, more training, and more chances to pass required checkpoints (not "politically correct" to fail a women); women were not "washed out" due to "quotas" and instead pushed through the system "like a minority," male instructors were afraid to treat women equally, or to "offend" women, for fear of being "brought up on Social Actions" (an office designed to ensure equal opportunity) allegations; and women received inflated grades and were unfairly considered for better follow-on slots due to their gender. Women generally felt instructors were more lenient with them, and they appreciated the special considerations. They also commented, however, that many instructors felt women should not be pilots, and recognized the instructors' fear of sexual harassment charges and being brought to the attention of the Social Actions office. Some women felt the instructors were harder on them and expected higher standards from them. Women also complained they could not "bond" with their instructors as the male students could.

### **Perceived Flight Performance:**

Both men (70%--209/297) and women (84%--250/299) generally believed they performed flight duties similar to the opposite sex, but a significant number (men 17%--51/297, women 14%--41/299) believed they performed their duties differently ( $p<0.001$ ). This belief was especially prevalent in Army men (27%--31/114) and women (16%--18/112) ( $p<0.001$ ). Of those responding that flight duties were performed differently, 80% (41/51) of the men believed they flew more aggressively than women ( $p<0.001$ ), and 47% (24/51) believed they flew with more precision ( $p<0.01$ ), while 73% (30/41) of the women believed they flew with more precision and 41% (17/41) that they flew more aggressively. Seventeen percent (7/41) of the women believed they flew less aggressively than their male counterparts ( $p<0.01$ ). These responses were similar when broken out among the two services. All pilots (66%--49/73) and all navigators (50%--7/14) generally believed they flew more aggressively and with more precision (pilots 58%--42/73, navigators 71%--10/14) than the gender opposite of their own. Most comments in this area focused on the belief that everyone is different and flies differently, and gender is not a real factor.

### **Perceived "Bonding" And Squadron Cohesion Concerns:**

Sixty-eight percent (202/299) of women felt they were able to "bond" equally to their own sex and to the opposite sex, while 44% (130/297) of men stated they had no experience in this area, or they were not able to bond (25%--73/297) ( $p<0.001$ ). Thirty-two percent (94/297) of men felt they could bond equally with men and women. These trends held true among the services. Men commented they were afraid to bond with women because of possible sexual harassment charges. Women commented they either did not understand the term or they have always had more in common with men than with other women, therefore bonding was not a problem. In this area, both men (45%--135/297) and women (50%--148/299) felt mixed squadron cohesiveness was the same as in an all-male squadron. Many men (32%--96/297; Air Force 28%--51/183, Army 39%--45/114) felt squadron cohesiveness was worse, and some

women (17%--52/299; Air Force 24%--44/187, Army 7%--8/112) felt it was actually better. Some Army women felt it was worse (12%--13/112). (gender differences  $p<0.001$ ; service differences  $p<0.001$ ). Although all job categories felt cohesiveness was about the same (pilots 49%--218/441, navigators 44%--45/102, flight surgeons 38%--20/53), more navigators felt it was better (20%--20/102), and more pilots (21%--94/441) and flight surgeons (25%--13/53) felt it was worse ( $p<0.001$ ). Twenty percent (58/297) of the men and 27% (82/299) of the women chose not to answer this question. Many of the subjective comments on this question focused on the respondent never having been in an all-male, or a mixed, unit, so could not answer. Men indicated experience with both environments and stated morale was decreased because men were afraid to treat women as they would normally treat a male squadron mate. Women generally stated they could not comment, as their mere presence made it a mixed unit; or that cohesion was just as good or better, but different.

### **Perceived Problems With Peers' Spouses:**

Women (31%--93/299) seemed to have many more problems with peers' spouses than did their male (7%--20/297) counterparts ( $p<0.001$ ), and more Army women (37%--41/112) than Air Force women (28%--52/187) complained of this problem (no significant difference between Army and Air Force). More navigators (24%--24/102) than pilots (19%--85/441) and flight surgeons (8%--4/53) ( $p<0.02$ ) complained about their peers' spouses. All the problematic spouses were women. Men commented their problems related to wives wanting to wear their husbands' ranks, thereby obtaining his "power," and the deleterious effects of the women's gossiping. Female participants commented their primary problem with peers' spouses related to jealousy that the spouses' husbands were spending so much time with them (another woman), both in the squadron and on long trips (deployments) away from home. The martial status of the female aircrew member did not matter. Some wives attempted to forbid their husbands to either fly or deploy with a female aircrew member.

### **Perceived Work Performance Requirements To Gain Same Benefits As Opposite Gender Peer:**

Thirty-four percent (101/299) of women felt they had to work harder to get the same benefits as their male counterparts. Twelve percent (37/297) of men felt they had to work harder than women ( $p<0.001$ ). This perception was more prevalent with Army women (39%--44/112) (Air Force 30%--57/187) and Army men (18%--21/114), who felt they had to work harder than their Air Force male counterparts (9%--16/183) to get the same benefits as their female peers ( $p<0.001$ ). Men commented they had to work harder to get the same recognition as their female peers for the same work, since women were felt to receive preferential treatment, either through grades, squadron assignments, type aircraft (quotas), or upgrading. Men perceived the standards to be lower for women. Women felt they were very visible, and could "never make a mistake," since they were scrutinized relative to men. They also felt they constantly had to "prove (them)selves" physically and mentally, and had to meet higher standards than their male counterparts. Many women admitted to having to study longer and harder than their male counterparts, as aircraft systems, mechanical ability, procedures and maneuvers (hand/eye coordination) were more difficult for them to understand and carry out.

### **Perceived Most Important Personal Characteristic:**

Women and men differed little in identifying their most important personal characteristic. The most important personal characteristic was either "getting the job done well" [men 42%--125/297 (Air Force 42%--77/183, Army 42%--48/114), women 39%--117/299 (Air Force 42%--78/187, Army 35%--39/112)], or "honesty and integrity" [men 45%--135/297 (Air Force 47%--86/183, Army 43%--49/114), women 44%--133/299 (Air Force 40%--75/187, Army 52%--58/112)]. There were no significant

differences between the members of the two services or between job categories, except that flight surgeons were a little less interested in "getting the job done well" (32%--17/53) ( $p<0.02$ ). Many men and women related all choices were equally important, or that family or their religious beliefs were the most important. Job satisfaction and professionalism were also frequently cited by both genders.

### **Perceived Preferred Behavior For Personal Use And Squadron Advancement:**

The survey attempted to force participants to choose between alternatives about their perception of behaviors designed to get ahead in their squadron, as opposed to behaviors that the participant actually used. Men and women differed little in their responses to these opposing behaviors, and there was little difference between the services and job categories. A considerable number of respondents (32%), however, resisted making a selection.

a. **"Get along by going along" vs. "Stand up for your beliefs"**: Most participants (55%--328/596; men 54%--160/297, women 56%--168/299) believed one must "get along by going along" to succeed in the squadron, although they did not use this behavior themselves. "Standing up for one's beliefs" was felt to be a preferred personal characteristic, but not too useful for succeeding in the squadron (79%--470/596; men 77%--229/297, women 81%--241/299). Flight surgeons (8%--4/53) were slightly less likely to "get along by going along" in the squadron, and felt "standing up for one's beliefs" helped one get ahead in the squadron (43%--23/53; pilots 39%--173/441, navigators 29%--30/102) ( $p<0.004$ ). Pilots, on the other hand, differed from navigators and reported themselves to be more likely to compromise for squadron harmony.

b. **"Do favors for your boss beyond your official duties" vs. "Focus your energy on your official duties"**: Most respondents (60%--358/596; men 61%--182/297, women 59%--176/299) felt one should "focus energy on official duties" to get ahead, as well as for personal use (86%--512/596; men 86%--256/297, women 86%--256/299). Some respondents (32%--192/596; men 31%--93/297, women 33%--99/299), however, believed doing "special favors for the boss" was helpful to get ahead, although they felt such behavior was not suitable for personal use (7%--40/596; men 5%--16/297, women 8%--24/299). This attitude was more prevalent in the Air Force (men 36%--65/183, women 35%--66/187) than in the Army (men 25%--28/114, women 29%--33/112). (No significant differences between gender or service)

c. **"Avoid controversy/risks" vs. "Tackle difficult problems"**: More respondents felt it was better to "tackle difficult problems," both to succeed in the squadron (60%--357/596; men 63%--187/297, women 57%--170/299), and for personal use (75%--448/596; men 76%--225/297, women 75%--223/299) than to avoid controversy. "Avoid(ance of) controversy/risks" was chosen a little more frequently by Air Force women (39%--72/187) to get ahead in the squadron than by Air Force men (30%--55/183) or Army aircrew (men 31%--35/114, women 32%--36/112) (no significant differences), and actually used by more Air Force men (21%--39/183) and women (23%--43/187) than Army aircrew (men 11%--12/114, women 5%--6/112) ( $p<0.001$ ).

d. **"Slipping a suspense is okay to be perfect" vs. "On time is better than perfection"**: "On time is better than perfection" was slightly more popular overall than "okay to be late for perfection," both for squadron success (59%--354/596 versus 31%--184/596) and personal behavior (52%--307/596 versus 38%--225/596). There was no difference here between the services to get ahead, but Army and Air Force personnel differed significantly in personal use ( $p<0.004$ ). Flight surgeons preferred "okay to be late" (49%--26/53) over "on time" (38%--20/53) for their personal use, but not to get ahead in the squadron (32%--17/53 versus 53%--28/53); these differences, however, were not significant.

e. **“Buy the best when we can afford it” vs. “Always buy the least expensive option that meets specs”**: It was generally felt to enhance success in the squadron (54%--325/596) and to fit personal beliefs (63%--377/596) if one “(bought) best when can afford” instead of “always buy least expensive that meets specs” (30%--178/596 to get ahead, 19%--116/596 personal use). Army personnel were significantly more likely to feel “buy(ing) least expensive” was career enhancing (men 36%--41/114, women 37%--41/112), (Air Force men 24%--43/183, Air Force women 28%--53/187) ( $p<0.001$ ).

f. **“Compliment appearance of colleagues of opposite sex” vs. “Never appear to flirt with colleagues of opposite sex”**: “Compliment(ing) appearance of opposite sex colleagues” was generally not felt to be a good way to get ahead in the squadron (17%--100/596 approval; men 12%--37/297, women 21%--63/299) ( $p<0.02$  between genders), nor was it frequently used (22%--130/596) [but was more used by women (25%--76/299) than by men (18%--54/297); not significant]. “Never appear(ing) to flirt with opposite sex colleagues” was felt to be preferable for all endeavors (get ahead 67%--398/596, personal use 64%--380/596). Air Force women were most likely to feel complimenting others was acceptable behavior to get ahead (26%--48/187) ( $p<0.003$ ), and personally used it (29%--55/187) (no significant difference).

#### **Desire To Recommend Career Path To Others:**

A significant number of men and women would recommend their own career path to their son (men 71%--210/297, women 74%--221/299) ( $p<0.001$ ), another relative (men 70%--208/297, women 78%--234/299) ( $p<0.02$ ), or a friend (men 71%--211/297, women 77%--231/299) ( $p<0.03$ ). Women would recommend it to their daughter, but to a lesser extent than to individuals in the other categories (69%--207/299). Relatively few men (34%--102/297) would recommend it to their daughter ( $p<0.001$ ). Many respondents felt an individual's personality would dictate their recommendation, as the military isn't for everyone. Many Air Force navigators, both male and female, felt their flight role was not appreciated and would not recommend it to anyone, although they would recommend a flying career as a pilot. Many men felt today's military was not worthwhile as a career for political considerations, although a single tour to a motivated individual could be tolerated. Women listed the problems they've experienced due to their gender as detractors. Many Army aircrew would recommend flying in the Air Force, not in the Army, as they feel Army aviators are not treated as “first-class” citizens.

#### **Prisoner Of War (POW) Concerns:**

Sixty-five percent of aircrew (388/596) (men 65%--192/297, women 66%--196/299) reported they were prepared to be a POW (no significant difference), Air Force personnel (men 70%--129/183, women 72%--135/187) more so than Army personnel (men 55%--63/114, women 54%--61/112) ( $p<0.001$ ). Fifty-one percent (27/53) of flight surgeons believed they were prepared to be POWs ( $p<0.01$ ), even though 34% (18/53) believed their training in this area to be adequate ( $p<0.01$ ). Comments in this area focused on feelings that no one is ever really prepared to be a POW, but that they were as prepared as possible. Seventy-seven percent (140/183) of Air Force men and 80% (149/187) of Air Force women felt they had adequate training in the consequences of being a POW, while only 41% (47/114) of Army men and 32% (36/112) Army women felt they had adequate training ( $p<0.001$ ). Air Force participants generally believed their training was adequate, but would appreciate periodic refresher training, with lectures from former POWs. Flight surgeons suggested they get mandatory Survival, Escape, Resistance and Evasion (SERE) training. Army personnel generally stated they had not received any SERE training, and that any training in this area would be greatly appreciated. Apparently, only Army Special Operations aviators regularly received SERE training at the time of this survey. Some women commented they would appreciate female-specific training regarding how to cope with the consequences of being a POW.

Most participants had similar concerns about being a POW, with no significant differences between men and women, Army or Air Force aircrew. Greatest among these concerns were fear of physical (74%--443/596) or psychological (53%--313/596) abuse or torture, fear of the unknown (68%--405/596), concerns for other POWs (53%--318/596), and breaking under pressure (50%--298/596). Of less concern (less than 50% of respondents) were permanent physical scars (26%--156/596), permanent psychological scars (45%--268/596), and, least of all, what other POWs might think (15%--89/596). In contrast to the above, relatively few men feared rape or sexual abuse (30%--90/297), while 67% (201/299) of women had this fear ( $p<0.001$ ). Another difference was concern for family (men 74%--219/297, women 61%--183/299) ( $p<0.001$ ). These were the only areas of difference between men and women in this section of the questionnaire. The individual subjective comments varied greatly. Some centered on the concern that male aircrew would try to protect female aircrew to the detriment of all. Others feared death, long captivity time, or that the government would "forget" them. Other concerns focused on being able to return to a normal life after captivity, loss of control, and being used for propaganda.

### **Combat Concerns:**

Eighty-seven percent (258/299) of female aircrew (Army women 90%--101/112, Air Force women 84%--157/187) asserted that women should be allowed to fly combat missions, while men either maintained that women should not be allowed to fly combat missions (44%--112/297) or were undecided (15%--45/297) ( $p<0.001$ , opinions of men and women). There were no significant differences in support for women flying combat missions between the pilot (63%--275/441), navigator (65%--66/102), and flight surgeon (55%--29/53) populations. Eighty-six percent (158/183) of Air Force and 85% (97/114) of Army men and Army women believed women should be *forced* to fly combat, if permitted to do so; 75% (141/187) of Air Force and 85% (95/112) of Army women held a similar attitude. Overall, only 10% (29/297) of men and 16% (47/299) of women felt women should have the option of going to combat (no significant difference). Again, stratifying for job categories, there was no difference between pilots (82%--361/441), navigators (84%--86/102) or flight surgeons (83%--44/53), in maintaining that women should be *forced* to fly combat, if permitted to do so.

The most important information in this section of the survey came from the subjective comments to these questions. Most respondents (73%-- Air Force men, 83%-- Air Force women, 82%-- Army men, and 79%-- Army women) offered subjective opinions on these questions. A representative sample is offered:

#### ***FEMALE AIRCREW SHOULD BE ALLOWED TO FLY COMBAT MISSIONS:***

Women most frequently indicated they should be allowed to fly combat missions on an equal basis as men, *only* if they are qualified to do so, without quotas. Women repeatedly stated the best person for the job should be allowed to fly the mission, regardless of gender. Career enhancement was frequently noted. Frequent comments were made that since everyone in the military takes the same oath of service, everyone should be available for combat duty, especially since the military is now an all-volunteer force. Some women maintained that women should not fly combat missions because of POW concerns (either fear of possible mistreatment, or that male aircrew would attempt to protect them, or combat is a man's area of expertise, not a woman's and that society is not ready for women in combat cockpits). Some women were ambivalent. Women, however, frequently stated they have already flown combat missions, although the missions were not classified as such, during Desert Storm. The comments of female Army and female Air Force aircrew were similar.

Most of the male participants focused on POW scenarios. Most felt there is no special male attribute that enables them to fly in combat situations better than women. The perceived problem with women flying in combat seemed to be centered on what would happen if the women aircrew were taken prisoner. Some

men said they would do everything/anything to protect the female aircrew member, simply because she is a woman; others were angered by the notion they might be “required” or expected to protect women in a POW scenario. Male participants echoed the same plea of the female participants: women should be equally qualified and not assigned to combat aircraft to fill a quota. Many men believed the best pilots were needed for combat roles, regardless of their gender. About a third of those responding to this question from each service ignored POW concerns and instead felt strongly that women would destroy unit cohesiveness as they are more emotional, less aggressive, are a distraction to the male aircrew, have more health problems (and “down time”), the standards are lower for them, and the culture, either of the participant or the country, would not permit women in combat.

***IF WOMEN ARE ALLOWED TO FLY COMBAT, THEY SHOULD HAVE THE OPTION OF WHETHER THEY ACTUALLY GO TO COMBAT, OR BE FORCED TO GO ON AN EQUAL BASIS AS MEN:***

Many women seemed to have the mistaken notion that men volunteer for combat, and are not forced to go into combat. Women maintained that they should not be forced to go to combat if men weren't to do likewise. Many women felt that women who “choose” fighter/combat aircraft should not be treated differently than men. A small number of women maintained that anyone who joins the military should expect to go to combat. This belief was not universal, as other women (the minority) opined that women should not be forced into combat. They further maintained, however, that if combat flying became mandatory, women should be offered the opportunity to leave military service, since flying combat was not a possibility for them when they joined the military.

There seemed to be a great deal of animosity amongst the men against the women about the possibility of a female combat option. The men overwhelmingly asserted if women were to force themselves into combat aircraft, take a slot away from a man, and have “money spent” to train them to fly combat, they should definitely be forced to fly combat, on an equal basis as men. They did not believe that women should have the option of not going to combat, unless men had the same option.

**Menstrual Concerns (women only):**

Nine percent (26/299) of women responding reported experiencing a decrement in their flying ability during their menstrual cycle, the greatest percentage of these were flight surgeons (not significant). One woman reported menstrual concerns were of no consequence to her since she had not had a cycle for two years due to pregnancy and breast feeding (not enough variance to determine significance). Some women felt their menstrual cycle actually improved their flying ability. Of the 26 participants admitting to problems, 81% (21/26) reported problems on the first or second day of their menstrual cycle. No Army women and only 20% (3/15) of Air Force women who felt a decrement in their flying ability attempted to get off the flight schedule during their problematic days.

Of 299 women responding, 36% (108/299), mostly pilots and navigators, admitted to taking medication before or during a symptomatic menstrual cycle. Of those admitting to self-medicating for menstrual symptoms, 43 took some form of aspirin, 34 took acetaminophen in various formulations, 38 took ibuprofen (up to 800 milligrams), 18 took Midol (ibuprofen) or Pamprin, six used birth control pills or diet therapy, one each admitted to Naprosyn, Anaprox, Nuprin (ibuprofen) or diazide. A total of 122 women admitted to taking medication for menstrual symptoms, even though some answered “no” to the “yes/no” portion of this question. They seemed to believe taking over-the-counter medication was not self-medicating. Moreover, several women used combinations of two medications.

Many of the women who responded to this section of the questionnaire were somewhat hostile. Comments such as “You guys are incredible! Wake up out there! We gals talk about this and I’ve never

met one with a problem", or "GET REAL--How old fashioned can you get...women do not fall apart on their periods", or "I don't have cramps, or bloating, etc....What an ASSUMPTION to base a question on! Like asking 'when did you stop cheating on your spouse.' Shame on you!" were contrasted with comments such as "On tough cramp days, I would rather floss my spine with barbed wire than be asked to do anything. If I were allowed to take a pain reliever (i.e. motrin) and not be grounded, life would be much easier on that ONE day a month" and "If one is aware of the problem, one can deal with it---'crankiness' does not affect performance. Men get cranky too." Women seemed to be sensitive to gender-specific problems; only 26 respondents admitting to having problems on any of the days during or before the menstrual cycle. Since 122 women admitted to taking medication or some other type of therapy for menstrual symptoms, the problem does exist. This type of denial could be seriously detrimental to flight performance.

### **General Concerns:**

When asked to communicate any other problems or concerns, the responses were many and varied. Male Air Force aircrew commented on a few areas that were worrisome to them: benefits are dwindling while operational commitments increase; concern about women being allowed into combat; fatigue, circadian rhythm, and nutrition concerns; and sensitivity about the issue of homosexuals in the military. Male Army aircrew expressed concerns regarding perceived problems with women in combat; career concerns; perceived favoritism towards female aircrew; and aircraft concerns. Female Air Force aircrews' concerns centered on: pregnancy and flight status; personal aircrew equipment fit; their role in combat aircraft; health concerns; lifestyle concerns; and perceived gender discrimination. Female Army aircrew commented on: perceived gender and job discrimination; aircraft and flight-time concerns; personal aircrew equipment fit; waste disposal concerns; pregnancy and flight status; and women in combat. The concerns in this section of the questionnaire for the most part echoed the comments already covered in the other parts of the questionnaire. This section was included primarily to ascertain whether there were concerns that had not been addressed in the questionnaire. Of interest, there was some concern about the proposed change in policy to retain homosexuals in the military. It is not "politically correct" to comment openly on this topic and, apparently some of our participants felt "safe" enough to do it here. Also, enhanced operational tempo with declining assets, along with circadian rhythm and fatigue concerns were raised. These concerns were probably provoked by the events witnessed during the drawdown of size and defunding of many units and missions.

### **Discussion**

The most striking, although not unexpected, finding of our survey is the similarity between male and female aircrew members. The similarity of male and female aircrew was consistent, in most instances, across the Army and the Air Force.

This survey was carried out in 1993. At that time, women were still not, for the most part, allowed to fly combat aircraft. They were relegated more to tanker, transport, and other non-combatant aircraft. Attack and fighter-type aircraft, which normally have shorter times per flight, were almost exclusively flown by men. Many men (67%) in this survey flew the same types of aircraft women flew. Most Army aircraft are helicopters, a short-flight-time aircraft. This factor helps explain the relatively low flight time values recorded for Army aircrew, in comparison with their Air Force contemporaries. Also of interest, Army participants noted that most flight time is reserved for warrant officers. (We did not survey warrant officers.) The officer aircrew are usually considered staff officers and receive only minimal flight time to remain proficient. In the military aviation communities, accrued flight time is very important to one's standing among one's peers. Many flight surgeons prefer to fly only the minimum required time. Flight

surgeons are older than other aircrew members, on the average by five years due to the time required to complete medical school and internship. Now that women are not excluded from aerial combat, it may be instructive to assess how this change in policy is working. Ultimately, the experience of women in our next war will be the "acid test." Today's new female combat aviators may prove to be pioneers. The public is very supportive of female aviator combatants (13), despite the conclusions drawn from this survey's participants, but remain skeptical of female ground combatants (13). The issue of whether or not women should fly aircraft in actual combat is not necessarily a matter of thirst for blood. Many women are seeking recognition of the danger in which they are already or potentially engaged, e.g.: flying tanker aircraft in hostile skies. The value of combat service for both genders is for career progression, better future assignments and, ultimately, promotion to a higher rank. This survey pointed to a need for a consistent Department of Defense combat policy for both genders.

Air Force women often commented that long deployment or travel times were not convenient for their preferred lifestyles. They would rather be at one location with "normal" working hours. Men of both services and Army women also commented on the problem of not being at home much, and the staggered, inconvenient working hours; Air Force women especially noted this feature of military service. This finding may explain why fewer Air Force women plan on making the military a career. Also, many women wished to have a more "normal" homelife in which to raise their children. Navigators tended to want to remain in the military for a full career, perhaps because there are not many civilian job opportunities for them. Flight surgeons did not have the same interest as did the others in a military career, perhaps because of the greater job opportunities in the civilian community.

Many aircrew were not yet married, reflecting the general youth of the participants. A 65% overall marriage rate, however, and the number of participants with at least one child, demonstrate the need of the military to take care of family concerns. Although women were similar to their male counterparts as to time-in-service, age, etc., they married less often and had markedly fewer children than their male squadron-mates' spouses. This demographic characteristic may reflect their concern about enhancing their careers as well as their ability to care for their children properly.

The overall number of aircrew involved in aircraft mishaps was quite low, as was their number of injuries. Women, on the basis of this survey, do not appear to be more mishap-prone than their male counterparts. In fact, the percentage of males who had mishaps was slightly higher than the percentage of women who had mishaps, and much more so for Army men. This finding may be due to the type of aircraft flown: fighter and attack aircraft, and attack helicopters being more subject to mishaps (Air Force and Army Safety Center data). Helicopters are perhaps a little more dangerous than other aircraft, and attack helicopters more so, due to their type of mission and flight profile.

An unexpected finding in this survey was the very high percentage of female groundings due to pregnancy. Some of the women reported having been pregnant three to four times during their flying career. On the average, even an uncomplicated pregnancy puts an aircrew member off flight status for up to six months. Operational readiness could well be a factor. Almost 80% of women, however, delayed having children. The military must address the pregnancy dilemma, especially now in view of women being authorized to be in combatant roles, and the subsequent repercussions on the combat readiness of some squadrons. Even after correcting for the pregnancy factor, 16% of the women were grounded for periods greater than thirty days, as compared with 11% for the men, for other illnesses. The remaining female groundings were not necessarily "female" (genital) problems, as there was only one case each of uterine fibroma, endometriosis, and hysterectomy reported. This finding may go against the popular perception that women are, excluding pregnancy and related problems, a generally healthier lot than their male counterparts.



Women seem to not want to ground themselves on days when they have problems with their menstrual cycles for fear of drawing attention to themselves as a gender unable to perform their duties because of female-specific problems. Of interest is the relatively larger number of female flight surgeons admitting to a decrement in abilities during the menstrual cycle, as compared with their pilot and navigator peers. This admission may reflect a greater degree of acceptance by female physicians of physiological conditions over which they have limited control.

Women do not seem to fit the common stereotypes as to their desires and problems with their aircraft. Contrary to what may be commonly believed, women were, for the most part, quite satisfied with the aircraft they to which they are assigned. Actually, they seemed to be *more* satisfied with their assigned aircraft than their male counterparts. The survey was conducted in 1993, before most of the combat exclusions were lifted. Even when asked what type of aircraft they preferred to fly if not their current aircraft, most Air Force women desired general transport aircraft and Army women desired general purpose helicopters. Men wanted to change aircraft for career enhancement purposes, while women preferred a different aircraft for stability in their personal life. Career enhancement did not seem to be an issue with women. Men did not note their present airframe/mission to be "boring," while women did list boredom as a factor. Age of their present aircraft was an issue with many participants of both sexes and from both services. Flight surgeons generally had not wanted to be assigned to their current aircraft (perhaps desiring the "glory" of jets), but were quite satisfied with their aircraft and wanted to remain in it after exposure to it.

Most men and women felt their aircraft fit well. Only 64 respondents felt their aircraft did not fit well. The reasons for the poor fit were as would be expected: men felt their legs were too long or that the seat was not adjustable enough; while women complained their arms and legs were too short, and the seat was not adjustable enough. Some women mentioned safety of flight issues with their arms/legs being too short; some admitted to trying to alleviate the problem with various combinations of added cushioning. Counterintuitively, some Army women maintained that their arms or legs were too long; perhaps these were tall women who experienced the same problems as did the men in the sometimes small helicopter cockpits. Male ejection-seat aircraft pilots complained about the seat's poor comfort.

Flight safety is a serious issue for aircrew. This section of the questionnaire elicited many comments, with repeating messages: aircraft are old, the airframes are getting worn out, and no one seems to listen. Many complained no one in the hierarchy wanted to discuss what aircrew considered to be very real safety problems with their aircraft. Maintenance concerns surfaced repeatedly: undermanned maintenance shops, not enough funds to do the job correctly, and inexperienced personnel. Several participants offered opinions as to when the next mishap would be, and what would be the cause. Some aircrew suspected that they were not getting the full story on the real cause of aircraft mishaps. Concern regarding aircrew fatigue were again raised. The safety of aircraft seemed to be worrisome to both genders and to the same extent. There was a difference between the services in this area, probably because of the types of aircraft flown.

Inherent safety concerns for the various aircraft being flown needs to be addressed honestly by the hierarchy to alleviate aircrew fears for their safety.

In-flight waste collection is a problem for both genders and both services. As previously noted, women were restricted from combat aircraft during the time period when the questionnaire was administered. They were primarily flying transport or logistics aircraft, or helicopters. Aircraft of assignment probably helps explain why more women felt their aircraft had adequate facilities than did men, since many men were assigned to fighter or attack-type aircraft. Aircraft of assignment may also help explain why more navigators felt their facilities were adequate, since they are usually assigned to larger aircraft, which

commonly have adequate waste disposal facilities. When facilities were available, as in transport-type aircraft, many times they were non-functional, lacked privacy, or had other problems. The majority of Army aircraft were helicopters, without any facilities, explaining why more Army personnel felt their facilities were inadequate. Generally, aircrew do not consider the lack of adequate waste elimination facilities to be a major problem, although most of the participants had some sort of comment in this area. Too frequently, aircrew, both male and female, try to ameliorate the waste-collection problem by fasting and/or dehydrating themselves for prolonged periods before flight, thereby potentially creating a flight safety issue. The surprising finding here was the large number of men who dehydrate themselves prior to flight. Dehydration was generally felt to be only a female concern, since almost all aircraft have relief tubes. Some men seem to have difficulty using relief tubes, piddle paks, or condom catheters. Even more surprising is the number of flight surgeons who admitted to fasting and dehydrating themselves before flight. Flight surgeons are charged with the health and welfare of flight crews and should be knowledgeable about the deleterious effects of fasting and dehydration; they do not seem to be setting the best example. Waste elimination and collection was probably an issue before women came into the cockpit, but was not formerly addressed. Waste elimination and collection has recently become a greater challenge with the advent of mixed-gender aircrews and inadequate facilities. Waste collection and disposal is a high priority issue, even though aircrew frequently have other concerns they prefer to address. Also, aircrew, being the innovative and aggressive types they are, frequently adapt to uncomfortable situations. However, military flying requires one's attention be on the task at hand, not on an uncomfortable physiologic urgency with no quick means of resolution in a dehydrated state. A higher priority needs to be given to adequately resolving this challenge, both for men and women.

As anticipated, small women do have a fit problem with most of the issued flight clothing and equipment. The problem is not only related to size, but to body configuration. Women (inverted triangle) are shaped differently than men (upright triangle), and personal equipment should reflect that shape difference. Robinette reviewed the various theoretical clothing and equipment problem areas, stating "the sizes needed have been determined for many items. What remains is to create them" (8). In our study, flight suits seem to be the biggest fit problem for women. In many instances where safety of flight was an issue, the female respondents had special-ordered clothing made. Large men also seem to have problems in this area, although not as severe as for women.

The supply system may contain the desired material, but it is frequently difficult to obtain. Waiting periods for specially ordered equipment or clothing were reported to be up to four years. Baggy flight suits may not be considered a safety of flight issue, but that cannot be said for poorly fitting oxygen masks, helmets, and anti-G suits. Another survey (7) recently found that the operational anti-G suit had fit problems for both men and women. The services are now working on gender modification for some articles of clothing, such as the anti-G suit and related assemblies (11). A long waiting period for properly-fitting flight gear is unacceptable. Adequate aircrew flight and survival equipment are essential for performance of flight duties. In general, aircrew, both men and women, are quite satisfied with their equipment and gear. Some fit problems still exist for very small women and some very large men. Although women have been in the military cockpit for twenty years, equipment and gear for the diminutive female frame have not yet become a staple in the inventory. This lack of consideration for the female form is especially evident in the fit of flight suits, gloves, boots, and oxygen masks. Most women accept and function well in the male sizes without decrement. There is a fair number, however, who have fit problems with very basic gear. With the advent of women in combat, more positions will be opened to female aircrew. It is only reasonable that flight gear be specifically designed for women. Another challenge is to design eyeglasses that are comfortable for men and women to wear with flight helmets and oxygen masks.

The experience of women, as gauged by this questionnaire, suggests they are perceiving widespread sexism. Nevertheless, the cultural icon of the "casting couch" does not seem to have an analogous situation in the cockpit. Very few respondents alluded to sexual favors being used as currency to gain special benefits. Pretty women, however, are seen as getting more breaks, but without reciprocal sexual obligations. Female participants, while not desiring to be the romantic partners of their instructors, do mourn the lack of opportunity to be more social with their instructors (joking with, being seen as a protégé). Moreover, women described being in a bind: party and cuss be labeled a "slut;" fail to do these things and be called a "bitch." Women perceive men as being the recipients of mentoring. All agreed extra effort is given to see that women pass through the system without difficulty. Few endorsed any safety concerns; only one respondent stated women are retained in the cockpit even if unsafe (note: survey conducted prior to the LT. Kara Hultgreen controversy). Role confusion, particularly with older male instructor pilots, seems prevalent. Many instructor pilots treat young female student pilots as though they were their daughters. Jones (4) wrote about such role confusion. Women favorably accept extra chances to pass checkrides in UPT and are perceived by men as receiving more remedial help. Men felt women were not held to the same high standards. Many women felt they needed to work harder and stand out because of their gender, admitting, however, these were self-imposed standards. In sum, women are in a precarious position in the aviation world. Women perceive they are seen as only temporary occupants in the cockpit, therefore not worth "wasting a good rating." Women felt as though they needed to do a better job than men to earn the same respect, while women who fail are seen by women to stand out more. In any event, a woman's good performance is usually met with surprise. For all the prejudice the female aviators face, our armed forces seem to be especially hard on them. Women may need to learn some new emotional outlets or men may need to become desensitized to crying. Perhaps some of the qualities men have employed with female student pilots could also serve their male student pilots well, such as more patience and less yelling. Men's motives may not be noble and may instead be an attempt to avoid paying a visit to the Social Actions office. The current interest in whether or not women belong in the cockpit may be an extension of other turf issues: Reserve Officer Training Officer-commissioned officer versus service academy graduate and warrant officer versus commissioned officer.

While women, by definition, can never know about the experience of an all-male squadron, many younger male aviators will also never have this experience, due to the growing presence of women in aviation. The cohesiveness of a flying organization or the degree of bonding may be more related to the policy of crew formation (hard, fixed crew versus continually newly formed crews) than the composition of the crew (14). Many participants (both male and female) argued for the individuality of pilots and rejected any male/female dichotomy. The pattern of responses suggests there is more prejudice based on the navigator/pilot dichotomy and other dichotomies, other than gender. Nevertheless, many women responded they must continually prove themselves; they must compensate or even overcompensate.

Novello and Youssef (5) found general aviation women were more similar, in their personality-functioning, to general aviation men than to women in the general population. The female respondents reflect that finding when they suggest they have always had more in common with men than other women. This extreme similarity may not be as strong in the cognitive arena as female participants cited difficulty with stereotypical male activities (electrical, mechanical systems). Recent research has posited a difference in male and female cognitive ability and brains (2) that may help to explain this finding. Socialization may also be a key as male and female children face very different expectations while growing up.

The overwhelming report that wives are jealous of the time their husbands spend with female aircrew, particularly in a temporary duty or deployed situation, may be a call for additional programs. Orientation

flights and familiarization with the female military member may help. Other opportunities to decrease animosity and jealousy might include increased opportunities for socialization with the husbands of female aircrew.

Both Air Force men and women receive the same SERE training at the survival school at Fairchild Air Force Base. When "rape resistance" training was offered several years ago, the female students were apparently offended at the perceived need for special training (J. Mitchell, Ph.D., personal communication, 19 June 1995). The issue of rape, however may need to be addressed as both men and women are potential victims of this violation. While some women had concerns related specifically to their gender, most who responded to this survey discounted any special gender vulnerability. Many of the men and women surveyed worried about the men's inability to cope with maltreatment of women. There were many general comments, from men and women, reflecting the concern that men would take risks to save a woman whom they perceived as imperiled. Ursano, Wheatley, Carlson and Rahe (12) found that harm, and threats of harm, to other POWs were popular methods used in interrogation by the North Vietnamese during the Viet Nam conflict. Interestingly, men were significantly more concerned about what their families might think or might be going through, if they were to be held a POW. This concern may be related to the greater number of men being married, and/or with children, than the women, or it may only demonstrate the women's denial of outside welfare concerns. Although SERE training offered at Fairchild would hardly be anyone's idea of easy duty, there is obviously a great deal of consumer demand, including a band of loyal repeat customers. The best way to gauge effective coping strategies of men and women in captivity might be to study those who have endured captivity. Men have thus far been in the vast majority here. The qualities that lead to an ability to tolerate captivity may be different for men and women. The feeling among flight surgeons that they are not prepared to be POWs is not surprising, given only the flight surgeons who attend the Air Force's Residency in Aerospace Medicine (RAM) program attend the Fairchild survival school. Unfortunately, US Army aviators, other than those in Special Operations or RAM-trained physicians, do not receive SERE training.

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### Acknowledgments

We acknowledge the support and assistance of Dr. Gil Tolan (Colonel, USAF, MC, Retired) in the development of the questionnaire. We also acknowledge the statistical and computer support provided by Mr. William Jackson, Mr. Joe Fischer, and Mr. Dan Bauer. The editorial comments of Maj Suzanne McGlohn, LtCol Frank Fischer, and LtCol Glenn Goddard were thought provoking.

## APPENDIX A

(Questionnaire: Issues in Military Aviation)

## QUESTIONNAIRE: ISSUES IN MILITARY AVIATION

### A. GENERAL INFORMATION

1. Year of birth: \_\_\_\_\_
2. I am in the Army: \_\_\_\_\_ Air Force: \_\_\_\_\_ Navy: \_\_\_\_\_ Marines: \_\_\_\_\_
3. I have been in the military for \_\_\_\_\_ years.
4. I want to remain on active duty for at least twenty years.  
yes \_\_\_\_\_ no \_\_\_\_\_
5. I am a pilot \_\_\_\_\_ navigator \_\_\_\_\_ flight surgeon \_\_\_\_\_
6. I have been on flight status for \_\_\_\_\_ years.
7. I have \_\_\_\_\_ flight hours to date.
8. I am married \_\_\_\_\_ separated \_\_\_\_\_ divorced \_\_\_\_\_ single \_\_\_\_\_ widowed \_\_\_\_\_
9. My spouse encourages me to pursue my military flying career.  
yes \_\_\_\_\_ no \_\_\_\_\_ unsure \_\_\_\_\_ not applicable \_\_\_\_\_
10. I have \_\_\_\_\_ children.
11. My primary aircraft is: \_\_\_\_\_
12. I have been in an aircraft mishap. yes \_\_\_\_\_ no \_\_\_\_\_
13. I have been injured in the aircraft I fly. yes \_\_\_\_\_ no \_\_\_\_\_  
If yes, please explain.
14. I have had extended period(s) (greater than 30 days) of grounding.  
yes \_\_\_\_\_ no \_\_\_\_\_  
If yes, please explain.
15. What other information describes you and your current situation?  
Please explain.



**B. AIRCRAFT INFORMATION:**

1. Did you want to be assigned to your current aircraft on graduation from flight school?  
yes\_\_\_ no\_\_\_

If no, why not? Please explain.

2. Do you want to stay in your current aircraft? yes\_\_\_ no\_\_\_

a. If no, why not? Please explain.

b. If no, what type aircraft would you prefer to fly?

Why? Please explain.

3. Does the primary aircraft you currently fly "fit" you? yes\_\_\_ no\_\_\_

If no,

a. Do your legs seem too short? yes\_\_\_ no\_\_\_  
too long? yes\_\_\_ no\_\_\_

b. Do your arms seem too short? yes\_\_\_ no\_\_\_  
too long? yes\_\_\_ no\_\_\_

c. Are you able to adjust the seat for optimal vision?  
yes\_\_\_ no\_\_\_

d. Do you have the necessary strength to manage the controls?  
yes\_\_\_ no\_\_\_

e. Other. Please explain.

4. Do you have concerns about the safety of the primary aircraft you currently fly?  
yes\_\_\_ no\_\_\_

If yes, please explain.

5. How long is your usual flight in your primary aircraft? \_\_\_ hrs

6. Does your primary aircraft provide an adequate way for you to:

a. urinate? yes\_\_\_ no\_\_\_

b. defecate? yes\_\_\_ no\_\_\_

c. change sanitary napkins (women only)? yes\_\_\_ no\_\_\_

7. What, if anything, do you do to prepare for long flights to avoid having to relieve yourself in flight?

a. dehydrate self \_\_\_ (for how long preflight)? \_\_\_

b. fast before flight \_\_\_ (for how long preflight)? \_\_\_

c. other (please explain):

8. Have you ever worn a "diaper" type device for urine collection?  
yes\_\_\_ no\_\_\_

a. If yes, was it acceptable in terms of comfort, capacity, leakage?  
yes\_\_\_ no\_\_\_

b. If yes, did you notice any skin irritation?  
yes\_\_\_ no\_\_\_

9. Do you have any additional input to this section? yes\_\_\_ no\_\_\_

If yes, please explain:

**C. FLIGHT GEAR INFORMATION:**

1. Does your flight suit fit? yes\_\_\_ no\_\_\_

If no, is it

- a. too short? \_\_\_\_\_
- b. too long? \_\_\_\_\_
- c. too tight? \_\_\_\_\_ (where?) \_\_\_\_\_
- d. too baggy? \_\_\_\_\_
- e. other? \_\_\_\_\_ (please explain)

2. Do you normally wear an anti-G suit? yes\_\_\_ no\_\_\_

- a. If yes, does it fit/function well? yes\_\_\_ no\_\_\_

1. If no, is it

- a. too short? \_\_\_\_\_
- b. too long? \_\_\_\_\_
- c. too tight? \_\_\_\_\_ (where?) \_\_\_\_\_
- d. too loose? \_\_\_\_\_ (where?) \_\_\_\_\_
- e. other? \_\_\_\_\_ (please explain)

3. Do your flight boots fit well? yes\_\_\_ no\_\_\_

If no, why not?

- a. can't get small enough size \_\_\_\_\_
- b. other \_\_\_\_\_ (please explain)

4. Do you normally wear a helmet? yes\_\_\_ no\_\_\_

If yes,

a. what size is it small\_\_\_ medium\_\_\_ large\_\_\_

b. is it special fitted (poured)? yes\_\_\_ no\_\_\_

c. is it comfortable? yes\_\_\_ no\_\_\_

If no, why not?

1. hot spots \_\_\_

2. too loose \_\_\_

3. too tight \_\_\_

4. other \_\_\_ (please explain)

5. Do your flight gloves fit well? yes\_\_\_ no\_\_\_

If no, are they

a. too small? \_\_\_

If yes, where? \_\_\_\_\_

b. too large? \_\_\_

If yes, where? \_\_\_\_\_

c. other? \_\_\_ (please explain)

6. Do you normally wear a torso harness? yes\_\_\_ no\_\_\_

a. If yes, is it properly fitted? yes\_\_\_ no\_\_\_

b. If no, is it

1. too tight? \_\_\_

2. too loose? \_\_\_

3. too large? \_\_\_

4. too small? \_\_\_

5. does it otherwise fit incorrectly? yes\_\_\_ no\_\_\_

If yes, please explain:

6. other comments:

7. Do you normally wear a standard issue oxygen mask? yes\_\_\_ no\_\_\_

a. If yes, have you been able to achieve a good fit?  
yes\_\_\_ no\_\_\_

1. If no, does your mask seem

a. too loose? \_\_\_

b. too large? \_\_\_

c. too tight? \_\_\_

d. too small? \_\_\_

2. Are there hot spots? yes\_\_\_ no\_\_\_

3. Is your mask narrow enough to fit your face?  
yes\_\_\_ no\_\_\_

4. Can you easily see over the mask? yes\_\_\_ no\_\_\_

b. Do you wear a custom-fit mask? yes\_\_\_ no\_\_\_

1. If yes, does it fit/seal well? yes\_\_\_ no\_\_\_

Other comments?

8. Do you normally wear eyeglasses when you fly? yes\_\_\_ no\_\_\_

a. If yes, do you have any problems with them while flying, such as:

1. fogging? \_\_\_

2. vision, when wearing oxygen mask? \_\_\_

Please explain.

3. discomfort due to helmet/O2 mask/etc? \_\_\_\_

Please explain.

4. sliding down or up with or without G exposure? \_\_\_\_

Please explain:

5. too small to keep out peripheral light (sunglasses)? \_\_\_\_

6. other? (please explain)

9. Do you feel the flight gear you're required to wear is too heavy? yes\_\_\_\_ no\_\_\_\_

10. Do G forces make your flight gear seem excessively heavy?  
yes\_\_\_\_ no\_\_\_\_

11. Do you feel you should have gear you're not normally issued?  
yes\_\_\_\_ no\_\_\_\_

12. Do you feel you're issued too much flight gear (gear you would not use)? yes\_\_\_\_ no\_\_\_\_

13. Do you have any additional input to this section? yes\_\_\_\_ no\_\_\_\_

If yes, please elaborate.

#### **D. INTERPERSONAL RELATIONSHIPS:**

1. Are you treated on an equal basis by your:

a. female peers? yes\_\_\_\_ no\_\_\_\_

b. male peers? yes\_\_\_\_ no\_\_\_\_

2. Do you get "breaks" because of your sex? yes\_\_\_\_ no\_\_\_\_

3. Do flyers of the opposite sex get breaks denied you?

yes\_\_\_\_ no\_\_\_\_

4. Have you had any problems because of your sex in your relationships with your
- a. peers? yes\_\_\_ no\_\_\_
  - b. superiors? yes\_\_\_ no\_\_\_
  - c. subordinates? yes\_\_\_ no\_\_\_

If yes, please explain.

5. a. Do you feel you have been denied a desirable assignment because of your sex?  
yes\_\_\_ no\_\_\_
- b. Do you feel you have been offered a desirable assignment because of your sex?  
yes\_\_\_ no\_\_\_
6. Have you felt the need to perform to higher standards than your peers of the opposite sex?  
yes\_\_\_ no\_\_\_
7. Do you feel your sex was a factor in your assignment of aircraft?  
yes\_\_\_ no\_\_\_
8. Do you get your fair share of "the best flights?" yes\_\_\_ no\_\_\_

If no, why not?

9. Do you perform your flight duties differently than the opposite sex? yes\_\_\_ no\_\_\_

If yes, do you fly

- a. more aggressively? \_\_\_
- b. less aggressively? \_\_\_
- c. with more precision? \_\_\_
- d. with less precision? \_\_\_
- e. other? (please explain)

10. Did your flight instructors treat male students differently than the female students?  
yes\_\_\_ no\_\_\_

If yes, please explain.

11. Do you feel the need to "prove yourself" more than the opposite sex does to your peers or superiors? yes\_\_\_ no\_\_\_

12. Do you feel you've been able to "bond" to your squadronmates of the opposite sex in the same way you have been able to "bond" to those of the same sex? yes\_\_\_ no\_\_\_  
no experience\_\_\_

13. Compared to an all male squadron or unit, mixed (male and female) squadron/unit cohesiveness is:

better \_\_\_\_\_ the same \_\_\_\_\_ worse \_\_\_\_\_

14. Have you had any problems with your peers' spouses? yes\_\_\_ no\_\_\_

If yes, what sex was the spouse? \_\_\_\_\_

Please explain.

15. Have you had to work harder to get where you are than did your peers of the opposite sex?  
yes\_\_\_ no\_\_\_

If yes, please explain. (re: mechanical ability, hand/eye coordination, learning procedures, etc.)

16. What is most important to you (please rank 1-5, with 1 = most important and 5 = least important; use each number only once):

- a. interpersonal relationships \_\_\_  
(being well-liked)
- b. succeeding in your career? \_\_\_  
(early promotions, etc.)
- c. getting the job done well? \_\_\_  
(as close to perfection as possible)
- d. honesty and integrity? \_\_\_  
(being honest at all costs; no compromise of morals)
- e. other (please name) \_\_\_\_\_



**\*\*PLEASE NOTE: QUESTION 17 REFERS TO YOUR SQUADRON MATES IN GENERAL AND QUESTION 18 REFERS TO YOU.**

**17.** In each set of alternatives listed below, please circle the behavior which could help someone get ahead in your squadron/unit.

- |    |   |    |  |
|----|---|----|--|
| a. | get along by going along                            | vs | stand up for your beliefs                              |
| b. | do favors for your boss beyond your official duties | vs | focus your energy on your official duties              |
| c. | avoid controversy/risks                             | vs | tackle difficult problems                              |
| d. | slipping a suspense is okay to be perfect           | vs | on time is better than perfection                      |
| e. | buy the best when we can afford it                  | vs | always buy the least expensive option that meets specs |
| f. | compliment appearance of colleagues of opposite sex | vs | never appear to flirt with colleagues of opposite sex  |

**18.** In each set of alternatives listed below, please circle the behavior YOU use in your squadron/unit.

- |    |   |    |  |
|----|---|----|--|
| a. | get along by going along                            | vs | stand up for your beliefs                              |
| b. | do favors for your boss beyond your official duties | vs | focus your energy on your official duties              |
| c. | avoid controversy/risks                             | vs | tackle difficult problems                              |
| d. | slipping a suspense is okay to be perfect           | vs | on time is better than perfection                      |
| e. | buy the best when we can afford it                  | vs | always buy the least expensive option that meets specs |
| f. | compliment appearance of colleagues of opposite sex | vs | never appear to flirt with colleagues of opposite sex  |

19. Looking back, would you recommend your career path to:

- a. your son? yes\_\_\_ no\_\_\_
- b. your daughter? yes\_\_\_ no\_\_\_
- c. another relative yes\_\_\_ no\_\_\_
- d. a personal friend? yes\_\_\_ no\_\_\_

20. Do you have any other input to this section?

If yes, please elaborate.

**E. OTHER:**

- 1. Are you prepared to be a POW? yes\_\_\_ no\_\_\_
- 2. Do you feel you have had adequate training re: the consequences of being a POW?  
yes\_\_\_ no\_\_\_

If no, what would you like to see added to the training?

3. What are your special concerns re: being a POW?

- a. fear or concern re: physical abuse/torture \_\_\_
- b. fear or concern re: psychological abuse/torture \_\_\_
- c. fear or concern re: rape/sexual abuse \_\_\_
- d. fear or concern re: permanent physical scars \_\_\_
- e. fear or concern re: permanent psychological scars \_\_\_
- f. fear or concern re: what other POWs may think \_\_\_
- g. fear or concern for other POWs \_\_\_
- h. fear or concern re: breaking under pressure \_\_\_
- i. fear or concern for family (what they may be going through) \_\_\_
- j. fear of unknown \_\_\_
- k. other (please explain)

4. Women pilots/navigators/flight surgeons should fly combat missions. (please circle appropriate number)

**definitely agree 1 2 3 4 5 definitely disagree**

Briefly explain your answer.

5. If women are allowed to fly combat, should they:  
(Please check your preference - a or b)

- \_\_\_ a. have the option of whether they should go to combat?  
\_\_\_ b. be forced to go to combat on an equal basis as males?

**(WOMEN ONLY)**

6. During your menstrual cycle, do you feel any decrement in your flying ability? yes\_\_\_  
no\_\_\_

If yes, is the decrement:

- a. during the entire cycle? \_\_\_  
b. only the first or second day? \_\_\_  
c. just before the cycle starts (PMS) \_\_\_

If yes, do you try to get off the flight schedule during your "off" time?  
yes\_\_\_ no\_\_\_

7. If you have cramps, bloating, etc. before or during your cycle, do you take any medication?  
yes\_\_\_ no\_\_\_

If yes, what do you normally take:

- D. Please feel free to communicate any other problems/concerns you may have re: your aviation career in general or about your aircraft cockpit in particular. We are interested.